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STATE OF THE CANADIAN SPACE SECTOR 2002

EXTERNAL RELATIONS DIRECTORATE
CANADIAN SPACE AGENCY

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Note to readers: *The Annual Survey of the Canadian Space Sector has been undertaken since 1996. Comparative analyses of trends across time typically examine a 5-year period. Consequently, in this edition comparison and changes are reported for the 1998 to 2002 period. Readers should consult previous editions for information regarding results prior to 1998.*

MISSION STATEMENT
About the Authors
About this Report

The Canadian Space Agency is committed to leading the development and application of space knowledge for the benefit of Canadians and humanity.

About the Authors

The External Relations Directorate manages the strategic relationships between the Canadian Space Agency and its domestic and international partners. Key mandates include the development and implementation of policies and strategies relating to co-operation partnerships with domestic stakeholders (Federal and Provincial governments, industry and academia), international agencies and foreign industries. External Relations plays a pivotal role in supporting the commercial initiatives of Canadian space companies in world markets - a core mandate of the CSA - and in providing stakeholders with strategic and timely information.

About this Report

The **State of the Canadian Space Sector** report provides those working in the space sector, government and industry alike, with insight into the sector in which we operate. In turn, this information supports decision-makers in their endeavor to make informed and strategic choices for the future.

For more information

Information specific to Canadian space business and industry, including an electronic version of this report, is found at the following address: www.space.gc.ca (Science & Industry).

Acknowledgments

The CSA wishes to acknowledge the contribution of the organizations, both public and private, without which this report would simply not have been possible.

MESSAGE FROM THE PRESIDENT

Marc Garneau
CSA President

Last year I reported that we had begun to detect signals of revenue trends shifting downwards for many Canadian space sector companies. The results of the 2002 Annual Survey have confirmed this overall trend, with most companies showing very little if any growth. At C$1.8B, total revenues in Canada's space sector declined 4% from those reported in 2001. The decline in revenues was largely attributable to decreases in export revenues, perhaps reflecting the very real difficulty that the industry is encountering because of a depressed international marketplace.

Once again Telecommunications activities, although producing less revenue than in 2001, did generate over sixty percent of total revenues–remaining the core workhorse for the space sector and in fact buttressing it against the vagaries of the international marketplace. Indeed, given the significant contribution of the revenues generated by the Telecommunications sector to overall space revenues, we examined the data even further to better discern the specific characteristics of this revenue stream.

What we found is noteworthy in that of the $1.13B generated in the Telecommunications Sector (63% of total revenues), the large majority of revenues, that is **78%** or $874M, is from activities in **Applications and Services**. Of the remaining 22%, 12% or $137M is generated from Space Segment activities, 9% or $104M is from Ground Segment, and 1% or $12M derives from Space Research. If you add to this the fact that revenues from Ground Segment and Space Segment activities declined during 2002, it is little wonder that many of our company leaders, especially within the manufacturing sector, are deeply concerned for the overall future of the Canadian space industry and with maintaining the technological capacity of Canada's space companies. Clearly, the significant revenues generated within the Telecommunications Sector and specifically through Applications and Services activities can obscure significant losses within other sectors and activity areas and points to the merits of the more detailed analysis.

And still, when I meet with the industry and government partners, as I have over the past year, and as challenging as it has been for these companies, I am constantly impressed with the resolve and absolute dedication of the Canadian space industry to not only stay the course but also continue to contribute to Canada's knowledge-based economy and innovation agenda.

EXECUTIVE SUMMARY

Total revenues for the Canadian space sector in 2002 were reported as $1.8B[1], a decrease of 4% or $71M, over those achieved during 2001. Since 1996 when tracking began, space revenues have grown 86% from $969M to $1.8B. However, over the last five years (since 1998) the total revenues have increased a more modest 27%.

During 2002, the majority of the decrease in revenues can be attributed to declining Export revenues; ninety-four percent (94%) of the change in total revenues for the space industry ($67M of the $71M decrease in total revenues) is accounted for by decreases in export revenues. On the other hand, total export revenues have increased by 142% over the 1996-2002 timeframe.

In 2002, domestic revenues represented 60% of total revenues, ($1.073 of $1.8B) and an increase of 2% over 2001 figures where it represented $1.077B of $1.872B. It is also noteworthy that in 2001, Canada's space sector derived the significant majority of its domestic revenues from non-government (or Private) sources, a figure that grew 6% between 2001 and 2002.

The proportion (ratio) of overall space revenues represented by export revenues declined from 42% to 40% between 2001 and 2002. Nevertheless, the 40% ratio of exports to total revenues found in this year's results still emphasizes the strong export orientation of the Canadian space industry while perhaps also reflecting the difficulty the industry is encountering in the international marketplace.

Of the four **Space Categories monitored** through the Annual Survey, Applications and Services showed slight decreases in growth, down 0.9%. Both Ground Segment and Space Segment areas of activity lost more substantial ground showing revenues in decline 12.5% and 4.6% respectively. Only revenues within Space Research grew during 2002, increasing 24.6% ($7M).

Amongst the **Space Activities in Canada**, Telecommunications dominated space sector revenues in 2001, generating 63% or 1.13B of total reported space revenues. The comparable figure in 2001 was 67%. Earth Observation (EO) was the second strongest sector of activity, showing somewhat modest positive growth in 2002, increasing 5.8% ($13M) over 2001 levels. EO activities generated 13% of total revenues. Robotics revenues represented 8% of total space sector revenues in 2002 although showed a decline of 6.4% ($10M). Navigation activities generated a 6% ($10M) increase in revenues over levels in 2001 and represented 9% of total revenues. Space science activity decreased slightly, 1.8% or $1M, down from $59M to $58M.

Given the significant contribution of the revenues generated by the Telecommunications sector to overall space revenues, the data were broken down further to identify the specific sources of revenues. It is noteworthy that of the $1.13B generated in the Telecommunications Sector, the large majority of revenues, that is 78% or $874M, is from activities in Applications and Services. Of the remaining 22% the breakdown is as follows: 12% or $137M is generated from Space Segment activities, 9% or $104M is from Ground Segment, and 1% or $12M is from Space Research. The reader may recall that revenues from Ground Segment and Space Segment activities declined during 2002. Clearly, the significant revenues generated within the Telecommunications Sector and specifically through Applications and Services activities somewhat obscures significant losses within other sectors and activity areas.

[1] *All currency in Canadian dollars.*

EXECUTIVE SUMMARY

The 2002 **Regional Space Revenues** results found that the Prairie Region showed the strongest growth with revenues up 17%. The Prairies generated 4.9% of the total space sector revenues and derived the majority (72%) of its revenues from exports. Ontario and British Columbia also registered growth with revenues increasing 4% and 1.6% respectively. Atlantic Canada and Quebec revenues decreased 15% and 26% respectively during 2002.

The number of people in Canada's space industry **workforce** during 2002 declined 7.7%, decreasing from 6,275 to 5,789 workers. Ontario continued to employ the majority of space sector employees representing 59% of the total workforce. Quebec, British Columbia and the Prairies employed 21%, 9% and 6.5% of the total workforce respectively.

OVERALL RESULTS: 1998-2002

Year	Total Revenues	Domestic Revenues		Export Revenues		Workforce
	$	$	%	$	%	n
2002	1,800,139,269	1,072,633,400	60	727,505,869	40	5,789
2001	1,871,511,842	1,077,212,382	58	794,299,460	42	6,275
2000	1,430,941,403	774,729,039	54	656,212,364	46	5,950
1999	1,425,498,040	854,697,263	60	570,800,777	40	6,408
1998	1,420,153,485	802,255,204	56	617,898,281	44	5,930

OVERVIEW OF THE REPORT

In order to measure the changes taking place in Canada's space sector, the CSA undertakes an annual survey and publishes the results in the *State of the Canadian Space Sector* report. The 2002 edition profiles the sector over the course of January 1 to December 31, 2002. Data is provided in the following areas:

- Overall space revenues;
- Domestic v. export revenues;
- Revenues of Canada's Top 30 organisations developing and/or using space to generate revenues;
- Revenues by space categories (Space Segment, Ground Segment, Applications and Services, and Space Research);
- Revenues by sectors of activity (Telecommunications, Robotics, Earth Observation, Space Science, and Satellite Navigation);
- Regional Revenues (British Columbia, Prairies, Ontario, Quebec and Atlantic Canada);
- Workforce characteristics.

METHODOLOGY

Questionnaires were sent to over 200 private sector companies, research organisations and universities in Canada who have a defined strategic interest in the space industry. Additional data were collected through internal consultation with CSA and government officials whose dealings with stakeholders were deemed statistically relevant.

It is important to note that the company-specific information used to compile this report remains strictly confidential and cannot be released in a manner other than in an aggregate form.[2] Consequently, in certain circumstances, the authors are prevented from providing a more detailed explanation or in-depth analysis of the results.

[2] *CSA acknowledges a margin of error in the final results of approximately 2.5%.*

DEFINITION OF CANADA'S SPACE SECTOR

The Canadian space sector is defined as organisations (private, public and academic) whose activities rely on the **development and use** of space assets and/or space data. Accordingly, the sector encompasses the following activities:

Space Segment: Research and Development (R&D), manufacturing, testing, integration and launch of platforms (satellites, spacecraft and robotic systems), complete systems, subsystems and components.

Ground Segment: R&D, manufacturing, testing, and integration of facilities on Earth for controlling space-based systems and satellites, for linking satellites to operational terrestrial networks and for processing satellite-derived data.

Applications and Services: Development and/or provision of services and value-added products and technologies that are derived from the use of space systems and/or data, and the provision of consulting and engineering services.

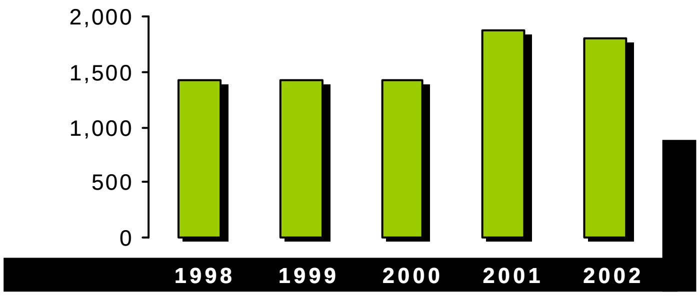
Space Research: Primarily research related to non- or pre-commercial space activities.

REVENUES
Overall Revenues
Domestic v. Export Revenues

OVERALL REVENUES

Total revenues for the Canadian space sector in 2002 were reported as $1.8B, a decrease of 4% or $71M, over those achieved during 2001. Since 1996 when tracking began, space revenues have grown 86% from $969M to $1.8B. However, over the last five years (since 1998) the total revenues have only increased 27%.

Total Space Revenues: 1998-2002 (C$m)



	1998	1999	2000	2001	2002
Revenues	1,420	1,425	1,431	1,872	1,800

DOMESTIC v. EXPORT REVENUES

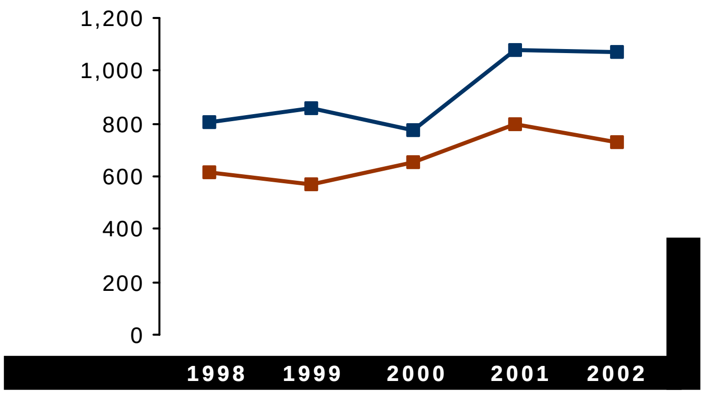
During 2002, revenues from domestic sources were $1.073B, representing a slight decrease of 0.4% over those reported in 2001 ($1.077).

In 2002, domestic revenues represented 60% of total revenues, ($1.073 of $1.8B) and an increase of 2% over 2001 figures where it represented $1.077B of $1.872B.

Export revenues also decreased during 2002, dropping 8.4% ($67M) from $794M in 2001 to $728M in 2002. Ninety-four percent (94%) of the change in total revenues for the space industry ($67M of the $71M decrease in total revenues) is accounted for by decreases in export revenues. Nevertheless, over the 1996-2002 timeframe, total export revenues have increased by 142%.

The proportion (ratio) of overall space revenues represented by export revenues declined from 42% to 40% between 2001 and 2002. The 40% ratio of exports to total revenues found in this year's results still emphasizes the strong export orientation of the Canadian space industry while perhaps also reflecting the difficulty the industry is encountering in the international marketplace.

Domestic v. Export Revenues: 1998-2002 (C$m)



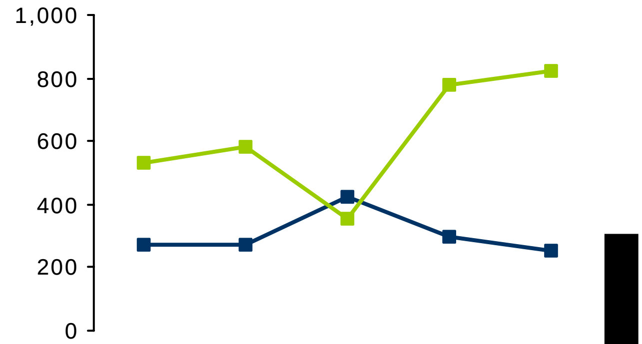
	1998	1999	2000	2001	2002
Domestic	802	855	775	1,077	1,073
Export	618	571	656	794	728

DOMESTIC REVENUES

Annually, respondents are asked to identify the source of their domestic revenues as either being derived from government ("Public") or non-government ("Private") sources. In 2002, the space sector continued the trend re-confirmed in 2001, of deriving the large majority of their revenues from non-government sources.

In 2002, of the total $1.073B total domestic revenues, non-governmental sources yielded $821M or 77%, a 6% increase over levels reported in 2001 ($778M). Conversely, domestic revenues from government sources declined 16%, dropping from $299M in 2001 to $252M in 2002. Once again, this finding where non-government sources outweigh revenues from government sources in 2002, is consistent with the overall trend observed since reporting began in 1996 (save for a one-time observation in 2000). The survey results show that the overall share of non-government derived sources of revenues increased in 2002 yielding a ratio of **77%/23%**, for "Private"/"Public" sources respectively compared with a ratio of **72%/28%** observed in 2001.

Sources of Domestic Revenues
Public v. Private: 1998-2002 (C$m)



	1998	1999	2000	2001	2002
Public	271	272	422	299	252
Private	531	583	353	778	821

REVENUES
Export Revenues

EXPORT REVENUES

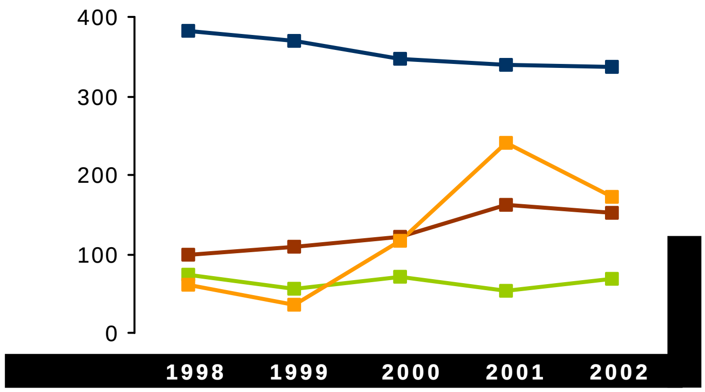
The 2002 survey results confirm the **U.S.** as the strongest performing market source of export revenues for Canada's space organizations, representing 46% (or $336M) of the $728M in total export revenues. This is a slight, 1.1% decrease ($4M) over the U.S. derived revenues reported in 2001 ($339M). As can be seen in the graph at right, revenues from the U.S. have been dropping annually since 1998, with the most significant change recorded in 2000 (a 6% decrease). Since 1998, revenues from U.S. sources have decreased by $47M.

Revenues from **Europe** decreased 4.8% during 2002, dropping $8M from $161M in 2001 to $153M in 2002. European-derived revenues accounted for 21% of the overall $728M export revenues, a slight increase over the 20% share it held in 2001.

Revenues from **Asia** showed positive growth in 2002, increasing $15M, or 28.5% during 2001. Asian-derived revenues represented 9% ($68M) of total export revenues compared with the 7% reported for 2001. Although not quite at the levels observed in 2000 ($71M), Asian-derived revenues seem to have 'recovered' somewhat in spite of the influence of fluctuating Asian economies and continue to be a good source of revenues for Canada's space industry.

In 2002, Canada's space industry derived $171M from sources of trade outside of its traditional trade markets. Revenues registered by respondents in the category **'Other'** represented 24% of total export revenues, although this amount is down a fairly significant 29% from levels reported in 2001. Sources of revenues reported in this edition of survey results, in this category, include Canadian industrial activity in South and Central America, amongst others.

Sources of Export Revenues: 1998-2002 (C$m)



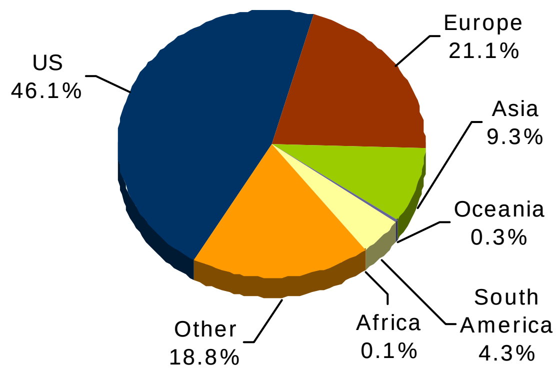
	1998	1999	2000	2001	2002
US	383	370	348	339	336
Europe	99	110	121	161	153
Asia	74	55	71	53	68
Other	62	35	116	241	171

REVENUES
Export Revenues

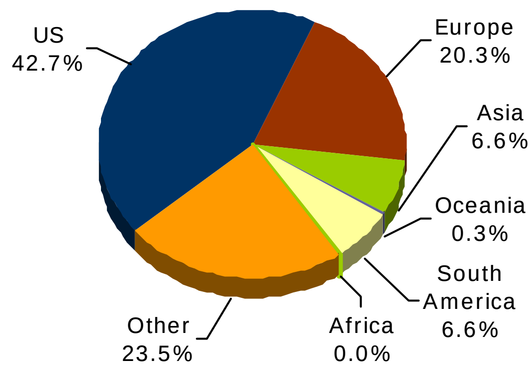
EXPORT REVENUES CONT.

Since 2000, respondents have been asked for a further breakdown of their revenues derived from **'Other'** sources to provide a more complete understanding of market-performance for the continents of Oceania, South America and Africa. The results of this new breakdown are provided in the accompanying graph, providing a comparison of results for the two-year period from 2001-2002. In 2002, there was a growth in revenues reported from both Africa and Oceania (13% and 6.3% respectively) showing some recovery from the decreases reported during 2001. Conversely, revenues from South America tumbled 40% during this same period of time.

Proportion of Export Revenues: 2002



Proportion of Export Revenues: 2001



REVENUES OF CANADA'S TOP 30 SPACE ORGANISATIONS

In 2002, 98% of the total space revenues are accounted for by the Top 30 Canadian organizations developing and/or using space assets. This finding mirrors the results of the 2001 survey.

In 2002, **40** organizations reported revenues equal to or in excess of $1M compared with 37 organizations so reporting in 2001. Although an 8% increase, this number still falls short of the levels previously reported, for example in 1996, where 47 companies earned revenues in excess of $1M.

REVENUES BY SPACE CATEGORIES

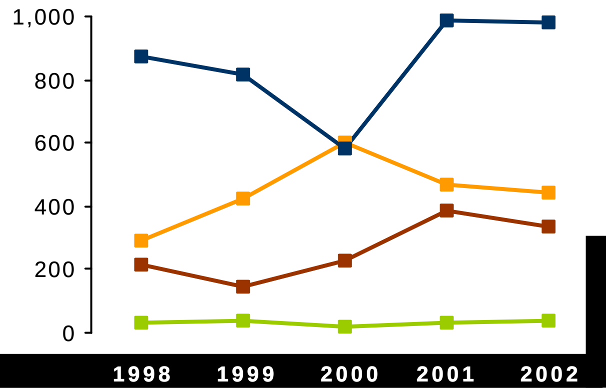
Space Segment: Revenues declined during 2002, down 4.6% ($22M) over levels achieved in 2001. This makes two years of consecutive decline in revenues for the space segment category. Since 2000, revenues in this category have declined $157M or 26%. Space segment revenues represented 25% of total space sector revenues in 2002, identical to the percentage found in 2001. This compares with 42% of total revenues found in 2000. Overall, Space Segment revenues have grown 30% since tracking began in 1996.

Ground Segment: Revenues declined during 2002, down 12.5% ($48M) over levels achieved in 2001. This is the first decline in revenues for this category since 1999 (performance was steadily improving between 1999 and 2001). Ground Segment revenues represented 19% of total revenues compared with the 21% it represented in 2001.

Applications and Services: Revenues dropped slightly during 2002, down 0.9% (9M) from levels achieved in 2001. In fact revenues for Applications and Services have shown this pattern of growth and decline since 1996 (a 7-year reporting timeframe). Applications and Services revenues represented 54% of total space sector revenues in 2002, a 1% increase over that recorded in 2001. Since tracking began in 1996, revenues from Applications and Services have grown 84% and continue to represent the leading source of total revenues for the space sector industry.

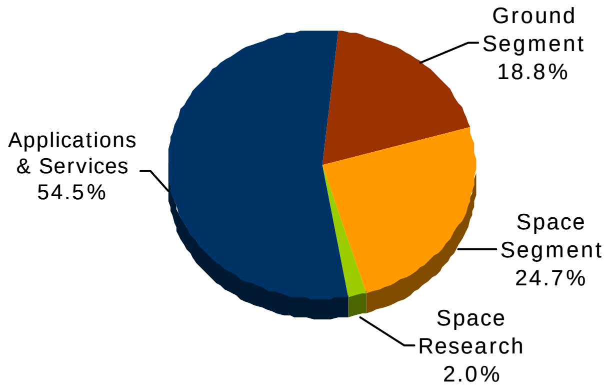
Space Research: Revenues increased 24.6% ($7M) during 2002, growing from $30M in 2001 to $37M in 2002. Space Research revenues accounted for 2% of total space revenues, compared with the 1.6% reported in 2001.

Total Revenues by Space Category: 1998-2002 (C$m)



	1998	1999	2000	2001	2002
Space Segment	294	425	602	467	445
Ground Segment	215	147	229	386	338
Apps & Services	876	816	584	989	981
Space Research	34	38	16	30	37

Proportion of Revenues by Space Category: 2002



REVENUES
Revenues by Sectors of Activity

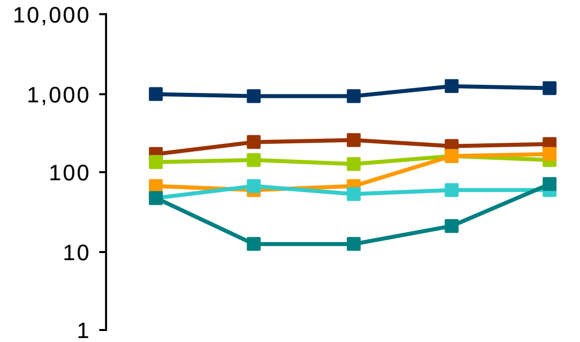
REVENUES BY SECTOR OF ACTIVITY

Telecommunications: As has been the case since tracking began, the Telecommunications sector generated the lion's share of the Canadian space sector's revenues in 2002, representing 63% or $1.13B of the total reported revenues. However, revenues were down 10.5% (or $133M) from those reported in 2001, perhaps appropriately reflecting the overall global downturn in this sector. Over the past five years, telecommunications revenues have increased by 17.5%.

Given the significant contribution of the revenues generated by the Telecommunications sector to overall space revenues, the data were broken down further to identify the specific sources of revenues. The results are shown in the **Chart: Breakdown of Telecommunications Revenues (2002).**

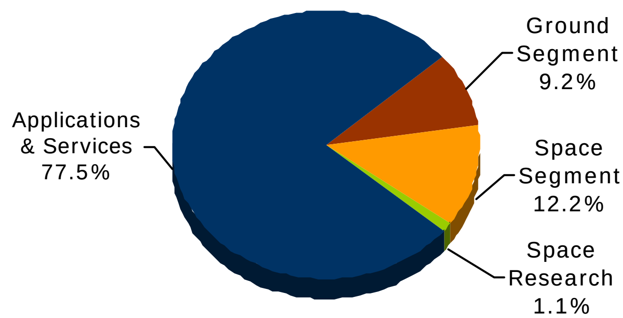
Of the $1.13B generated in the Telecommunications Sector, the large majority of revenues, that is 78% or $874M, is from activities in Applications and Services. Of the remaining 22% the breakdown is as follows: 12% or $137M is generated from Space Segment activities, 9% or $104M is from Ground Segment, and 1% or $12M is from Space Research. The reader may recall that revenues from Ground Segment and Space Segment activities declined during 2002. Clearly, the significant revenues generated within the Telecommunications Sector and specifically through Applications and Services activities somewhat obscures significant losses within other sectors and activity areas.

Total Revenues by Sectors of Activity: 1998-2002 (C$m) (Logarithmic)



	1998	1999	2000	2001	2002
Telecom	960	901	920	1,261	1,128
Earth Obs.	166	246	254	219	232
Robotics	134	140	126	156	146
Navigation	67	58	67	155	165
Space Sci.	47	68	52	59	58
Other	47	12	12	21	71

Breakdown of Telecommunications Revenues: 2002



REVENUES BY SECTOR OF ACTIVITY CONT.

Earth Observation: Observers will be content to see that revenues in the Earth Observation (EO) sector, the second largest space sector of activity, grew by a modest 5.8% in 2002, rising to $232M from $219M (or $13M) in 2001. EO revenues represented 12.9% of the total revenues, showing a slight gain over the 12% levels achieved in the previous year, but not regaining the levels of peak performance found in 1999 or 2000. Overall, revenues have grown 40% ($66M) between 1998 and 2002.

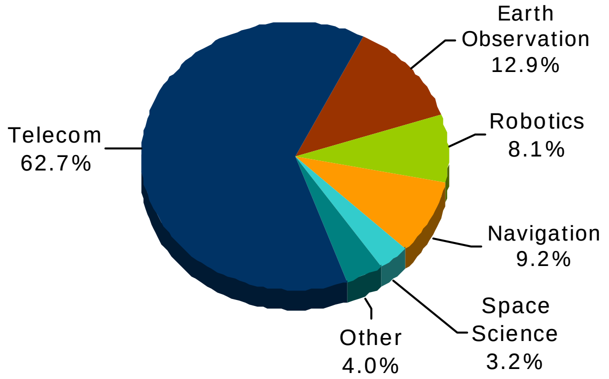
Robotics: Revenues in this sector fell by 6.4% during 2002 ($10M) and generated 8.1% of the total space revenues, consistent with its proportional position in 2001. In fact, since 1998, Robotics activities have consistently represented 8% - 9% of total space revenues. Overall, since 1998, Robotics revenues have grown by $12M or 9.0%.

Navigation: Revenues from the navigation sector continue to show growth, up during 2002 to $165M, an increase of 6% ($10M) over 2001 findings. Navigation revenues represented 9% of the total space revenues, a 1% increase over 2001 figures, where Navigation generated 8% of total revenues. Since specific tracking of this sector began in 1998, revenues have grown by $98M or 147%, signifying the importance of this sector of activity for the Canadian space sector.

Space Science: During 2002, revenues within the Space Science sector of activity decreased slightly, 1.8% or $1M, down from $59M to $58M. Revenues generated from Space Science activities represented 3.2% of total revenues, consistent with levels reported for 2001. Since 1998, revenues have increased $12M or 25%. It is interesting to note that revenues in 2002 were very similar to those reported in 1996 when tracking began.

Other: Space-related activities in areas other than those classified above, reported a very significant 235% increase over revenues reported in 2001, rising from $21M to $71M, or a $50M in total. Activities in the "Other" activity represented 4.0% of total space revenues.

Proportion of Revenues by Sectors of Activity: 2002



REVENUES
Revenues by Region

REVENUES BY REGION

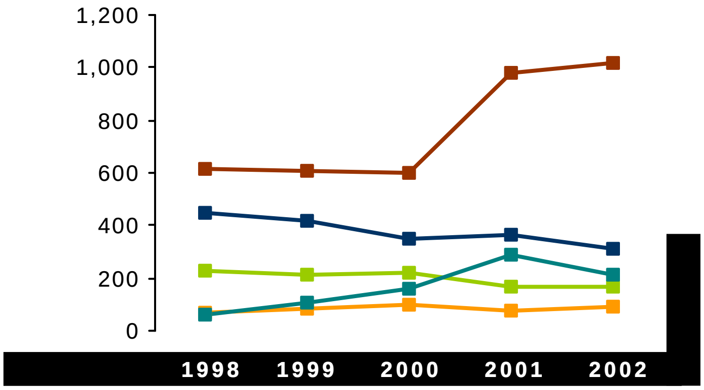
British Columbia: Revenues from British Columbia showed modest growth during 2002, rising 1.6% or $3M over 2001 levels (growing from $166M to $169M). British Columbia revenues represented 9.4% of total revenues for the space sector, a ratio comparable to 2001. However, it is noteworthy that since 1998, revenues from British Columbia have dropped 26%.

B.C. continued to derive the majority of its revenues from the domestic market ($104), which in 2002 represented 61.5% of its total revenues, compared to 38.5% ($65M) derived from export markets. In 2001, the ratio of domestic to export sources was 76/24. It is worth noting that in 2002 B.C. exports **increased 64.2%** over reports for 2001, growing from $40M to $65M. Since 1998, domestic revenues have increased 13% (or $12M). Conversely, export revenues have decreased overall by 52.5% (or $72M).

Prairies: Total revenues for Canada's Prairie region (Alberta, Saskatchewan and Manitoba) increased 17% between 2001 and 2002 (growing from $75M to $88M). In 2002, the Prairies generated 4.9% of the total space sector revenues, a 0.9% increase over 2001. Over the five-year period 1998 to 2002, total revenues have risen 21.9% ($16M).

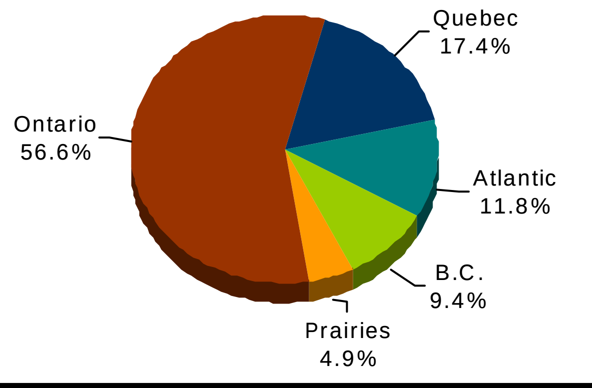
Canada's Prairie region derived the majority (72%) of its total revenues from exports in 2002, reporting a total of $63M in exports. This represented an increase of 22.6% over exports for 2001. Domestic revenues also grew, although by a modest 4.8%, from $24M to $25M. Between 1998 and 2002, the Prairie's export revenues have grown 22% and its domestic revenues have grown 22.1%.

Revenues by Region: 1998-2002 (C$m)



	1998	1999	2000	2001	2002
B.C.	229	211	217	166	169
Prairies	72	85	101	75	88
Ontario	614	611	600	978	1,018
Quebec	445	416	353	366	313
Atlantic	60	103	160	286	213

Regional Proportion of Total Revenues: 2002



REVENUES BY REGION CONT.

Ontario: Given that a major proportion of overall revenues are typically generated within Ontario, it is noteworthy that after a phase of strong growth during 2001, 2002 revenues increased by a modest 4.1% or $40M, growing from $978M to $1.018B. Nevertheless, in 2002, Ontario increased its contribution to overall space revenues, generating 57% of the total, up from the 52% contribution level reported in 2001, further signifying the importance of the economic activity within Ontario for the Canadian space industry. Overall, between 1998 and 2002, space revenues have increased 65.7% or $404M.

Once again, in 2002 seventy-nine percent (79%) (or $804M) of Ontario's space revenues were derived from domestic sources while 21% ($214M) were derived from exports. Domestic-derived revenues increased 4.7% during 2002 and exports increased 1.6%. Over the five-year period 1998 to 2002, domestic revenues have increased 85.8% ($372M) and exports have increased 17.6% ($32M).

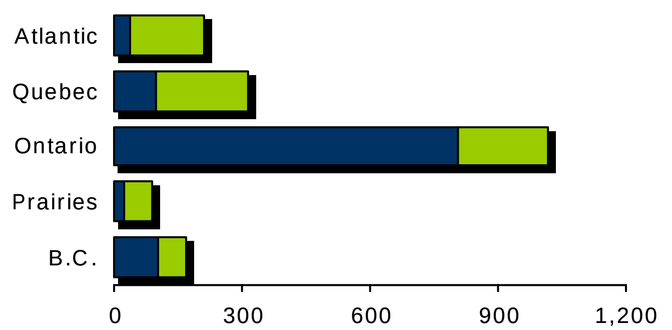
Quebec: Revenues from Quebec decreased 14.5% or $53M during 2002 and represented 17.4% of the total space revenues in Canada. This is the most significant percentage decrease in revenues reported for Quebec since tracking began in 1996. Over the five-year period 1998 – 2002, revenues have decreased 30%.

In 2002, Quebec continued to derive the majority of its revenues from exports ($212M/68%). However, the 2002 figures are lower than for 2001 where the comparable numbers were $257M/70%. Export revenues dropped 17.4%, from $257M in 2001 to $212M in 2002. Domestic revenues also decreased, dropping 7.7% from $109M to $100M. Since 1998, export revenues have increased by $15.6M or 7.9% whereas domestic revenues have decreased by $148M or 60%.

Atlantic: Revenues decreased in Atlantic Canada during 2002 by 26%, down from $286M to $213M in 2001. Atlantic Canada represented 11.8% of the total space revenues whereas it represented 15% of the total in 2001.

Atlantic Canada continued to derive the significant majority of its revenues from export sources, which in 2002 represented $173M (or 82%) of the total $213M. Export revenues however, were down 27% during 2002, decreasing from $236M to $173M. Domestic revenues were also down, decreasing 22% from $50M in 2001 to $39M in 2002. Since 1998, Atlantic Canada's export revenues have typically shown significant and major growth (240%). Domestic revenues have also grown, showing over 300% growth since 1998.

Domestic v. Export Revenues by Region: 2002 (C$m)



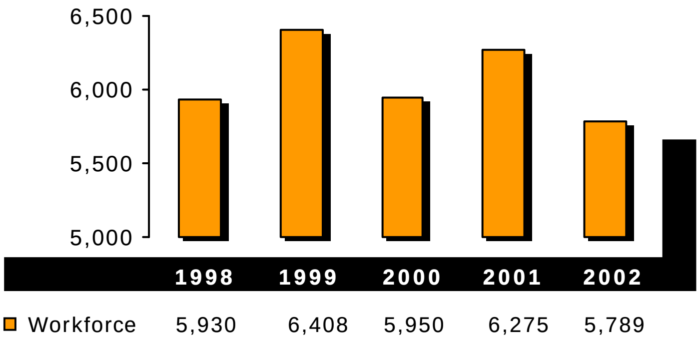
	B.C.	Prairies	Ontario	Quebec	Atlantic
Domestic	104	25	804	100	39
Export	65	63	214	212	173

SPACE SECTOR WORKFORCE
Workforce Groups

SPACE SECTOR WORKFORCE

During 2002, the Canadian Space Sector employed 5789 workers, 486 (-7.7%) fewer than in 2001. This employment figure returns the statistic to levels found in 1998.

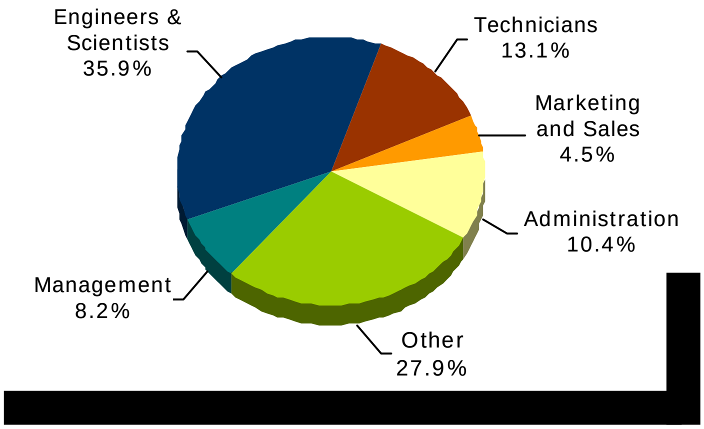
Space Sector Workforce: 1998-2002



WORKFORCE GROUPS

Of the five main sector employment groups, the **"Engineers and Scientists"** group continued to predominate the workforce, comprising the largest number of employees, namely 2077 workers or 36% of the space sector workforce in 2002 (although a 5.4%/119 person decrease within this group). Comparatively speaking, in 2001, this employment group represented 35% of the total workforce. The chart below provides a breakdown of the distribution of employment groups working in the Canadian Space Sector in 2002. Note that the major change (or % loss of workers) has taken place in the Technical, Marketing and Sales and Management categories (-12.8%, -12.7% and -11.4% respectively).

Workforce by Space Employment Categories: 2002



Workforce Groups by Region: 2002

	BC	Prairies	Ont.	Que.	Atlantic	Total
Mngmt	60	26	277	76	35	473
Eng/Sci.	226	211	821	775	44	2,077
Tech.	50	78	379	176	77	760
Mktg/Sls	64	9	127	16	46	262
Admin.	77	40	400	65	23	605
Other	32	15	1,422	121	23	1,613
Total	509	379	3,425	1,229	248	5,789

SPACE SECTOR WORKFORCE
Workforce by Region

WORKFORCE BY REGION

British Columbia employed 509 or 9% of the nation's space workforce in 2002. B.C. represented 7% of the total workforce in 2001. Also comparing figures for 2001, B.C. has increased its workforce within the space sector by 11.4% (or 52 hires).

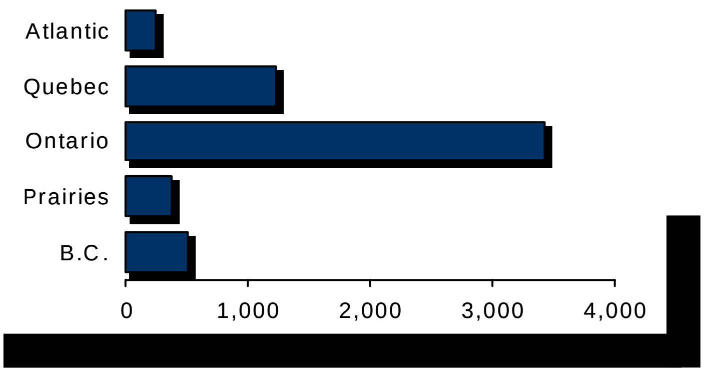
The **Prairies** employed 6.5% of the space sector workforce (379), representing a 0.5% increase over 2001. In 2002, the Prairies employed 5 more workers than in 2001 (increase of 1.3%).

Ontario dropped 100 workers from its roster during 2002, employing 3425 people while still increasing its relative contribution to the total workforce by growing its share to 59% (from 56% in 2001) of the total space sector workforce. The space sector workforce in Ontario has grown by 19% from 2,870 to 3,425 between 1998 and 2002.

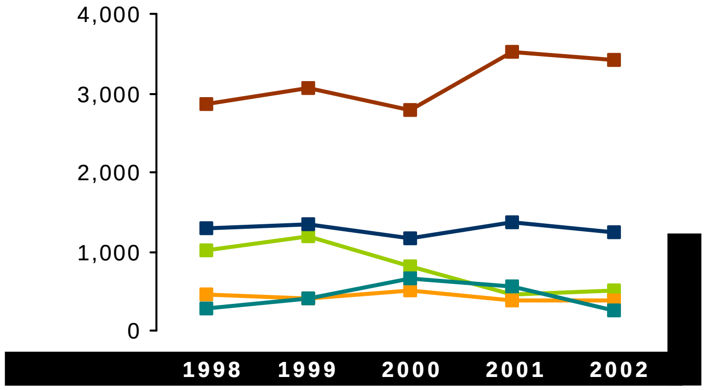
While still representing 21% (1,229) of the total space sector workforce, the **Quebec** based space sector employment figures dropped by 10% (137) during 2002. Since 1998, Quebec has shown a negative growth in employment of 5%.

***Atlantic** Canada employed 4% of the country's space sector workforce in 2002, a decrease of 5% over 2001. Since 1998, Atlantic Canada has decreased its space sector workforce by 12%. (*Note that a major space sector company in Atlantic Canada requested a change to their number of employees as submitted for 2001 (downward) thereby increasing the percentage of change in the comparison between the two years than actually took place.)

Space Sector Workforce by Region: 2002



Space Sector Workforce by Region: 1998-2002



	1998	1999	2000	2001	2002
B.C.	1,023	1,193	817	457	509
Prairies	463	414	499	374	379
Ontario	2,870	3,066	2,793	3,525	3,425
Quebec	1,291	1,335	1,176	1,366	1,229
Atlantic	282	401	665	553	248